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High Density Bio-Nano Device Fabrication with Supramolecular NanoStamping¹ MAITRI DESAI, Augusta State University, ROBYN CROSS, Spelman College, KEITH CARROLL, JENNIFER CURTIS, Georgia Institute of Technology — DNA microarrays are miniature complex devices that organize a high density of genetic information for biomedical applications such as genetic screening. Fabrication of DNA microarrays can be realized with different micropatterning methods such as microcontact printing and Thermochemical Nanolithography (TCNL). Recently, a low cost, high-throughput technique called supramolecular nanostamping (SuNS) has been developed to allow replication of DNA arrays by means of hybridization, contact to secondary surface, followed by dehybridization. However, the initial microarrays used for SuNS suffer from poor DNA density and the ability to make nanoscale resolution arrays practically. Our work focuses on combining the advantages of TCNL, which overcome these limitations, with SuNS. This will provide an ideal microarray fabrication process. To expedite the development stage, we have established a working SuNS protocol for our TCNL surfaces using microcontact printing rather than the more difficult, expensive TCNL. Once the SuNS is performed successfully and repeatedly using microcontact printing, ultimately, we will apply this method to nano resolution TCNL patterns and consequently combine TCNL and SuNS.

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